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PREVENTING BIOLOGICAL POLLUTION:

The Mediterranean Fruit Fly Exclusion Program

– 2003 –

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

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CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Gray Davis, Governor

William (Bill) J. Lyons Jr., Secretary

PREVENTING BIOLOGICAL POLLUTION:
The Mediterranean Fruit Fly Exclusion Program

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The Concept of Biological Pollution

Exotic and invasive species constitute a form of biological pollution that threatens America's people, commerce, and environment to the tune of $100 billion annually.[1]

California is at a crossroads. As the fifth largest economy in the world, poised on the Pacific Rim, we are at the cutting edge of globalization. Our affluent population is highly mobile and its diverse cultures create great demand for imported foods and other goods.

With this increasing movement of people and commerce, our environment is at special risk from the unintentional introduction of exotic and invasive species. These range from plants and animals to insect pests and various diseases. Invasive species are considered the second-greatest threat to biological diversity (after habitat loss) and are a leading factor in listings under the Endangered Species Act. Ecologists increasingly refer to this collection of invasive organisms as "biological pollution," a significant threat to California's people, commerce, and environment.

Working with our agency partners, the California Department of Food and Agriculture has significant responsibilities to protect our state from biological pollution. We work to eradicate the red imported fire ant, a scourge to wildlife and urban environments. We fight invasive aquatic weeds such as caulerpa, hydrilla, and water hyacinth. We combat terrestrial weeds such as yellow star thistle that displace native habitats, contribute to forest fires, and harm wildlife. We have successfully eradicated dozens of infestations of gypsy moth that threaten our forest resources, and have devoted many hours to defeating threats to urban landscapes, ranging from the red gum lerp psyllid to the Japanese beetle.

Red imported fire ants (above), water hyacinth (right) and gypsy moths (below) are other examples of invasive biological pollution in California.

To protect the food supply, over the past year the Department has tested over 160,000 cattle in an effort to eradicate bovine tuberculosis. As of this writing, 1,700 state and federal employees are devoted to ridding the state of exotic Newcastle disease, the most infectious disease known to affect all species of birds.

These invasive pests and diseases share three things in common:

- They came to California from other areas of the globe;
- Their new home has many of the attributes of their native environments, but typically none of their natural enemies, making them powerful foes against our native species; and
- They were brought here by the international movement of people and products.

[1] *David Pimentel, et al., "Environmental and Economic Costs Associated With Non-Indigenous Species in the United States," Paper presented at the annual meeting of the American Association for the Advancement of Science, Anaheim, California, Jan. 1999.*

The Mediterranean Fruit Fly

What Is This Pest and Why Is It So Destructive?

One of the world's most destructive pests affecting the food supply is the Mediterranean fruit fly, or Medfly *(Ceratitis capitata)*. This pest originated in Africa and today can be found in most tropical and subtropical areas of the world. The Medfly threatens the food we eat because it attacks ripening crops by piercing the fruit or vegetable skin and laying eggs in the puncture. The eggs then hatch into larvae, or maggots, which feed on the pulp, rendering the food unfit for human consumption.

California is at special risk from this form of biological pollution given the state's proximity and ties to Medfly-infested regions of the globe and our status as the world's leader in agricultural production.

The mainland United States has confronted only isolated Medfly infestations so far thanks to aggressive exclusion programs in susceptible states. If this pest were to become generally established here, tremendous harm would be felt throughout society. Growers would face increased production costs, workers would be impacted by job losses, and the general public would be harmed by higher food costs, lifestyle impacts, and sharply reduced state revenues.

Staggering Initial Losses

If California were to become suddenly and broadly infested with the Medfly, first-year losses would be measured in the billions of dollars. Part of this would be due to direct damages to food from the insect, but most of the financial impacts would accrue from trade losses. This is because so much of California's food production is consumed outside the state.

California is at special risk from Medfly infestations given the state's proximity and ties to Medfly-infested regions of the globe and our status as the world's leader in food production.

Trading partners, both in the United States and abroad, would immediately close their borders to our products until such time they were satisfied that ongoing treatment and control processes were in place. Some trading partners would never want to accept the agricultural imports of a Medfly-infested region, either out of fear of a failure in the treatment system, or as a strategy to protect the markets of their own industry.

A quarantine on products leaving the state could result in huge product losses

Medflies attack ripening crops by piercing the skin and laying eggs that hatch into larvae. The larvae feed on the pulp, rendering the food unfit for human consumption.

The Mediterranean Fruit Fly







Some Common Medfly Host Crops

Commodity	Value (2001)
Apple	$97,380,000
Apricot	22,330,000
Avocado	315,842,000
Cherry	79,814,000
Date	27,777,000
Dried Plum	101,250,000
Fig	14,529,000
Grape	2,650,873,000
Grapefruit	55,242,000
Guava	NOT COMPILED
Kiwifruit	15,340,000
Kumquat	NOT COMPILED
Lemon	212,725,000
Lime	NOT COMPILED
Loquat	NOT COMPILED
Mango	NOT COMPILED
Nectarine	127,642,000
Olives	90,096,000
Orange	514,460,000
Papaya	NOT COMPILED
Peach	246,743,000
Pear	78,163,000
Pepper	165,024,000
Plum	66,443,000
Pomegranate	NOT COMPILED
Pummelo	NOT COMPILED
Quince	NOT COMPILED
Tangerine	31,137,000
Tomato	766,260,000

Source: United States Department of Agriculture, National Agricultural Statistics Service.

Note: This host list reflects common and typical hosts and is not comprehensive.

(from 3)

because of the perishable nature of agricultural goods and the limited capacity of storage and treatment facilities. Treatment materials, processes and facilities to deal with an ongoing Medfly infestation could take months or years to put into place. During that time, trading partners would turn to what they would regard as more reliable suppliers of agricultural products. Likewise, our competitors would use their Medfly-free status as a marketing tool to lure customers away from California suppliers. Restoring these lost markets could take years.

Some impacts of a Medfly infestation are hard to quantify. For example, affected residential areas would face frequent government treatment regimens and the loss of backyard gardens. School instructional gardens would be a thing of the past.

High Ongoing Costs

In the months and years following a sudden and broad infestation, ongoing control costs would also be significant. According to a University of California study[2] that examined a representative sample of Medfly-vulnerable commodities:

- Our state would stand to lose $538 million in output, $259 million in total income, $283 million in gross state product, and 7,900 jobs.

[2] *Jerome Siebert, "Update on the Economic Impact of Mediterranean Fruit Fly on California Agriculture,"* Subtropical Fruit News *7, no. 6 (1999).*

The Mediterranean Fruit Fly

California Agricultural Employment

Thousands of jobs would be affected by a broad infestation of the Medfly in California.

	July '01	Aug. '01	Sept. '01	Oct. '01	Nov. '01	Dec. '01	Jan. '02	Feb. '02	Mar. '02	April '02	May '02	June '02
Grapes	33,400	48,000	56,300	40,900	23,400	28,300	31,900	28,800	25,200	29,900	35,000	40,400
Tree Nuts	3,000	9,400	11,100	8,600	6,600	5,200	6,000	7,100	6,100	7,300	5,200	7,000
Citrus Fruits	4,100	4,400	4,800	2,600	1,900	2,700	2,200	2,100	1,300	2,300	2,200	1,600
Deciduous Fruit	14,400	13,800	19,100	12,600	7,100	6,900	3,600	2,400	2,800	2,800	7,400	16,000
Cultivation	4,800	4,900	4,800	6,000	8,700	6,300	4,600	4,100	4,100	5,400	5,000	6,900
Harvest	5,600	4,200	5,400	9,600	6,100	3,400	1,600	1,600	1,900	3,400	3,900	4,100
Labor Contractors	153,300	155,000	149,800	114,900	99,800	86,000	77,400	77,700	82,700	110,000	127,100	138,300
Management Services	15,500	11,000	12,000	12,400	5,900	10,500	10,400	10,500	10,600	7,200	8,600	11,900
Other	15,800	10,800	10,800	12,100	7,600	5,600	7,600	12,700	13,700	19,300	17,200	15,000
Total	249,900	261,500	274,100	219,700	167,100	154,900	145,300	147,000	148,400	187,600	211,600	241,200

Source: Excerpts from the Employment Development Department's California Agricultural Bulletin, www.calmis.ca.gov/htmlfile/subject/agric.htm

(from 4)

- A general infestation would impose up to $341 million in additional production costs on California agriculture.
- Consumers could expect to pay up to $68 million in the form of higher food costs.
- Post-harvest pesticide treatments would become necessary for fresh produce shipped out of California in order to comply with quarantine requirements. Total post-harvest treatment costs for those commodities analyzed are estimated at $169 million.
- Packing, treatment, and shipping facilities would need to be upgraded to have fly-excluding equipment at an estimated cost of $12.3 million.
- Transportation to special treatment facilities would be required in many cases at an estimated cost of $8.8 million annually.
- Construction of additional methyl bromide treatment chambers and cold storage facilities is estimated at over $100 million.

These cost estimates are conservative because the study analyzed only a small sample of susceptible crops and assumed no reduction in production yield or interruption to market activity.

The Mediterranean Fruit Fly

An Environmental Threat

A Medfly invasion would also result in costs to the environment. For example, the wide scale use of additional pesticides necessary for eradication could interrupt integrated pest management practices that have successfully reduced chemical risk on California's conventional farms. The state's burgeoning organic industry could also face higher production costs, severe reductions in yield, and the likely need for crop protection treatments.

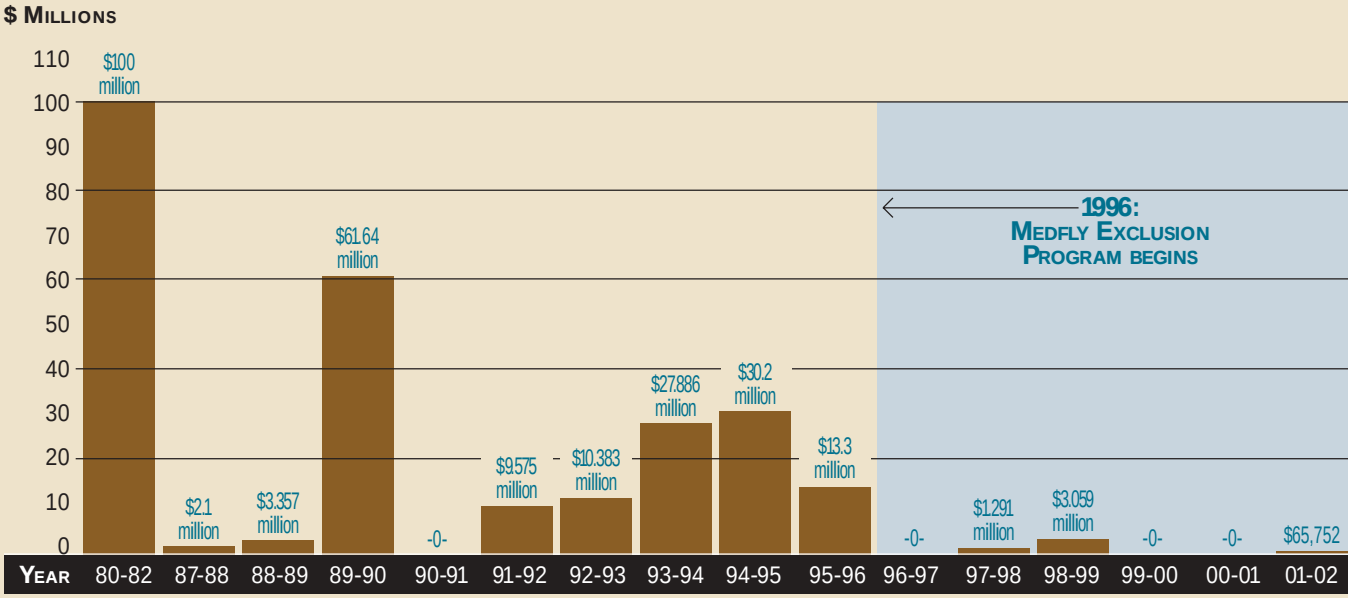
How Does This Pest Arrive in California?

The best available scientific evidence indicates that the Medfly is not permanently established in California, but that the pest occasionally enters the state from other parts of the world. Research at the University of Hawaii, the University of California, Berkeley, and Pennsylvania State University analyzing the DNA of Medflies recently captured in California, led experts to conclude that "…the fly can and does invade California with human help from a number of sources including Central and South America and Hawaii."[3]

Imports and international travelers are increasingly common paths of entry for the Medfly because it is impossible to monitor every shipment and passenger that might carry the pest. This explains why California's comprehensive pest detection network traces new Medfly outbreaks to urban—not rural—environments.

[3] *Memorandum from Mediterranean Fruit Fly Science Advisory Panel to CDFA, Sept. 10, 2002.*

Medfly Eradication Costs 1980-2002



Source: California Department of Food and Agriculture, Division of Plant Health and Pest Prevention Services.

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Medfly Pathways

Medfly Infestations and Their Origins 1997-2001

Of the last seven Medfly infestations in Southern California, DNA analysis shows that all but one resulted from separate, unrelated introductions of the pest. In addition to these infestations originating from Central America, Hawaii and South America, infested produce intercepted at California ports shows that infestations could come from many other countries around the world.

Medfly Interceptions: L.A. International Airport

Medfly-infested produce has been intercepted by inspectors at Los Angeles International Airport on flights from many countries since 1990.

Month	Year	Origin
January	1990	El Salvador
May	1990	El Salvador
August	1990	Honduras
August	1991	Israel
August	1991	Israel
December	1991	Egypt
September	1992	Israel
March	1993	Peru
July	1993	Brazil
July	1993	Iran
August	1993	Greece
September	1993	Egypt
September	1993	Ghana
September	1993	Italy
October	1993	Egypt
October	1993	Italy
October	1993	Lebanon
October	1993	Malta
November	1993	Israel
January	1994	Ghana
February	1994	Peru
April	1994	El Salvador
June	1994	Israel
November	1994	Israel
November	1994	Mexico
December	1994	Israel
May	1995	Nicaragua
August	1995	Egypt
December	1995	Costa Rica
December	1995	Egypt
February	1996	Nicaragua
March	1996	Peru
April	1996	Peru
October	1996	Peru
October	1996	Israel
January	1997	Guinea
March	1997	Peru
April	1997	Peru
August	1997	United Arab Emirates
September	1997	United Arab Emirates
November	1997	Brazil
December	1997	Israel
March	1998	Australia
October	1998	Egypt
October	1998	Turkey
December	1998	Israel
July	1999	Egypt
September	1999	Honduras
August	2000	Nicaragua
September	2000	Syria
December	2000	Philippines
May	2002	Peru
November	2002	Egypt

The Mediterranean Fruit Fly

A Changing World

While leading academic experts have concluded that international travelers and imported produce have historically been responsible for Medfly introductions, a new menace faces Californians: the specter of deliberate introduction of pests and diseases with intent to do harm to our economy and environment. We call this bioterrorism or agroterrorism, and it is a real threat to our food supply.

Biological terror can be low in cost, low in technology, and is capable of causing massive disruptions to our economy and way of life. While there is no evidence to suggest that any Medfly introduction to date has been deliberate, we must be ever watchful. Faced with this new threat, CDFA considers Medfly exclusion and rapid response to be even more essential for the protection of our food supply and economy.

It is well established that the Medfly is unable to come to California without human help. All Medfly findings to date in California are attributed to:

- The traveling public who unwittingly (and illegally) carried the Medfly into the United States on produce obtained outside the state; or
- Legal shipments of imported produce that did not receive adequate post-harvest treatment; or
- Smuggled produce.

"The past 8 years have seen a dramatic 82 percent increase in U.S. imports, and there is no reason to think that the arrival of harmful invasive species has not increased apace." [4]

Faced with the new threat of bioterrorism, CDFA considers Medfly exclusion and rapid response to be even more essential for the protection of our food supply and economy.

[4] *Peter T. Jenkins, "Paying for Protection from Invasive Species,"* Issues in Science and Technology, *Fall 2002.*

The Medfly Exclusion Program

Medfly Exclusion: A Special Program for a Special Pest

Given the high societal costs of responding to Medfly infestations, significant additional efforts go towards combating this special threat. Our Medfly Exclusion Program focuses on the Los Angeles Basin because its many ports of entry receive millions of international visitors and products from infested nations. The area is also home to periodic produce smuggling operations. And, because the region's climate is favorable to the Medfly, the pest thrives once here.

Rather than relying on chemicals to stop new Medfly infestations, our state has developed a unique, environmentally friendly approach: CDFA raises millions of sterile male Medflies and releases them within the high-risk area. These sterile flies will mate with any wild, fertile female Medflies that have been introduced into the area. Reproduction is curbed because the eggs resulting from this pairing with a sterile male will not hatch.

In the years since CDFA began aerial releases of millions of sterile flies, new infestations of wild fertile flies in the release zone dropped from an average of seven per year to just three over the past six years. The most recent wild Medfly finding in California was a female that was shown to have mated with a sterile male—the exact result the exclusion program is meant to generate.

Since the release of sterile flies began, new infestations in the release zone dropped from an average of seven per year to just three over the past six years.

Preventing Invasions

California's Comprehensive Pest and Disease Exclusion System

California has assembled the most comprehensive plant pest and disease exclusion system in the world.

CDFA scientists work hand in hand with USDA, county agricultural commissioners, University of California researchers and the agricultural community to protect California's environment and its people from destructive pests, plant species, and diseases.

The Department manages programs for excluding, detecting, eradicating and controlling harmful insects, weeds, plant diseases, and rodents. CDFA operates inspection stations along California's borders to screen vehicles for pests. Large shipments entering by land, sea or air are inspected at unloading and transfer sites within the state. The Department also manages an insect trapping program that deploys more than 100,000 detection traps in peak months. CDFA also operates a state-of-the-art diagnostics center for identifying insects, plant diseases, weeds, seeds, and other harmful agents.

Sterile release is the most effective method for preventing new Medfly infestations.

The Medfly Exclusion Program

Scientific and Fiscal Considerations

Over the years, there has been some discussion as to whether the release of sterile Medflies constitutes exclusion, eradication, or control. The distinction has both scientific and fiscal implications.

Exclusion programs work by preventing a pest not found within a particular jurisdiction from establishing itself. *Eradication* programs, on the other hand, are meant to eliminate infestations of new pests that have already penetrated an exclusion barrier. Historically in California, exclusion and eradication of pests have been considered General Fund responsibilities. *Control* programs, which are efforts to deal with well-established and ongoing pest infestations, in recent years have tended to be industry funded.

The Mediterranean Fruit Fly Science Advisory Panel—which comprises the world's premiere experts in Medfly research—concluded in 2002 that "the fly is not permanently established in the state," and that according to the best available scientific evidence, the Medfly Exclusion Program "cannot be considered a control program because there are no permanently established Medfly populations in California to control."[6]

Every dollar spent on early intervention against exotic and invasive species, on average, prevents $17 in later expenses.[5]

The Medfly Exclusion Program cannot be considered a control program because there are no permanently established Medfly populations in California to control.

Program Costs

The Medfly Exclusion Program costs approximately $18.8 million annually; half of this cost is borne by the federal government in a dollar-for-dollar matching arrangement with the state General Fund. The Administration and Legislature have consistently supported this funding arrangement over the past seven budget years.

[5] *Congressional Office of Technology Assessment, "Harmful Non-Indigenous Species in the United States," 1993.*

[6] *Source: Memorandum from Mediterranean Fruit Fly Science Advisory Panel to CDFA, Sept. 10, 2002.*

Medfly Science Advisory Panel Members:

Dr. Eric Jang, USDA, Hilo, Hawaii

Dr. Jorge Hendrichs, U.N. Food and Agriculture Organization, International Atomic Energy Agency, Vienna, Austria

Dr. Richard Rice, University of California

Dr. Kingsley Fisher, USDA, Honolulu, Hawaii

Dr. Aldo Malavasi, University of Sao Paulo, Brazil

Supplemental Report Request

In 2002, the Legislature asked the Department to explore potential funding sources that might offset some or all of this program's cost to the state General Fund.

Although we present a number of funding options for the Medfly Exclusion Program, the Department strongly recommends support of the Governor's Budget: full state General Fund support for this essential program. Other funding options have varying merit, and are presented for discussion purposes only.

Although we present a number of funding options for the Medfly Exclusion Program, the Department strongly recommends support of the Governor's Budget: full state General Fund support for this essential program.

Option 1. Continuing Full State General Fund Support

Continuing full General Fund support of the Medfly Exclusion Program is in keeping with the Governor's 2003-2004 Budget. The Department feels permanent support is warranted given the broad societal costs in the event of a general Medfly infestation (impacts to the state economy in the billions of dollars) and scientific consensus that international travel and the importation of products are responsible for new Medfly introductions. In addition, federal matching funds are at risk. Faced last year with a potential erosion of state support for this program, USDA sent CDFA an advisory that any reductions in state support for Medfly Exclusion would be met by a dollar-for-dollar cut by the federal government.

Any reduction in state support for Medfly Exclusion will be met by a dollar-for-dollar cut by the federal government.

Option 2. Existing Food and Agriculture Fund

Last year, budget supplemental report language requested that the Department examine replacing some or all of the state's General Fund support for Medfly Exclusion with money from the Agriculture Fund. For the purposes of this report, we took this request to mean evaluating and presenting a broad range of funding options, ranging from industry assessments to other funding mechanisms. This is necessary because the existing Agriculture Fund is not fungible.

Rather than one large pool serving industry, the Agriculture Fund is made up of dozens of separate sub-accounts, ranging from those set up for truck scale license fees to gasoline octane testing. The largest sub-account by far is the Milk Producers Security Trust Fund, an industry self-assessment intended to cover milk processor bankruptcies (and clearly not a commodity at risk for Medfly). These sub-accounts reflect explicit statutory mandates (166 at the last tally), with

Funding Options

Option 2 (continued)

legislative prohibitions on the use of these funds for purposes other than for which they were collected.

While the Agriculture Fund is not fungible, sub-accounts within the Fund can borrow from other sub-accounts. This is necessary because of wide fluctuations in cash flow for sub-accounts serving any given commodity. Also, upon appropriation, the General Fund can borrow against the Agriculture Fund (the customary level of interest accrues on the amount borrowed). For example, in the 2002-2003 Budget Act, the Legislature directed that the General Fund borrow $15 million from the Agriculture Fund. The Governor's 2003-2004 Budget extends repayment of this loan until October 2004.

Option 3. Assess Domestic Producers

This option considers setting up a new, multiple-commodity assessment mechanism to pay for Medfly exclusion.

Setting up an industry assessment program for a *single* commodity is a relatively simple task and typically takes only a few years to accomplish. The Department has many examples of such programs for single commodities based on a per-unit assessment standardized across the industry. Such a system quickly becomes challenging once the concept of a *multiple* commodity assessment program is introduced. This is due to vast differences between commodities in terms of how they are grown, processed, packaged, transported, and marketed. Consider the following:

- There is tremendous diversity of varieties within each Medfly host crop; even within the same variety, there are often varying uses and packaging. To offer but one example, California grows 82 varieties of grapes. Some are used for the fresh market, some for juice concentrate, some for wine, and others for raisins. For some varieties, there is no consistent market (growers will send their product to the most profitable use that season). Within the wine grape sector, profitability varies tremendously by variety and by region (e.g., Bakersfield or Napa). Given all of these unique factors with each variety and region, it took the wine grape sector of the industry nearly a decade to agree upon a self-assessment program to fund the simple gathering of production data.
- The agricultural community uses hundreds of different shipping containers, including differing containers for the same product, making a per-unit assessment infeasible. Some commodities are sold in bulk form (e.g., watermelon and wine grapes),

Funding Options

OPTION 3 (continued)

while some may be sold either packaged or in bulk (e.g., tomatoes), and still others may be offered in consumer or gift packaging.

- Prices and profitability vary widely. To again use grapes as an example, in certain areas of the state, some varieties will receive $75 a ton; in others, a good variety and appellation will bring several thousand dollars.

  Because of high input costs and competition, farm products are quite often sold below the cost of production. In these cases, a complicated payment withholding system might be needed to secure payment.

- Production, processing, packaging, transportation and marketing involve tens of thousands of locations, including field packing, all of which would interfere with administration of a per-unit assessment process.

- There is widespread use in agriculture of set-asides and consignment sales, in which the price is not determined until the product reaches an East Coast or international market. Some crops, such as raisins and nuts, are put into storage for long periods of time, and no price will be assigned until the product is sold, often months or even years later.

- Pest risk varies greatly between commodities, varieties, and with geography and climate. In the case of Medfly, there are dozens of host commodities with differing appeal or susceptibility to the pest. Should those who grow preferred host crops pay more than those who produce a product with less appeal for this pest? If two growers produce the same commodity, should the one living in an ideal Medfly climate pay more than one whose climate does not readily support the pest?

- Because international travel and food imports have been shown to be the primary pathways for this pest to enter the state, assessing the victims of Medfly infestations may trigger provisions of Proposition 218, which imposes various requirements on government depending on whether the revenue is determined to be an assessment, a fee, or a tax.

- The state would incur high administrative costs for setting up an infinitely complex multiple-commodity assessment, auditing and collection program.

  Despite a good faith effort, the Department is unable to offer a viable *direct-assessment* framework that would spread Medfly exclusion costs equitably and efficiently across vastly different industries. Among all of these many products and varieties, there is no one commonality upon which to base such an assessment. Tremendous differences in the growing, processing, packaging, transportation, and marketing of food products make it infeasible to *directly assess* the victims of Medfly infestations.

Tremendous differences in the growing, processing, packaging, transportation, and marketing of food products make it infeasible to directly assess the victims of Medfly infestations.

Funding Options

Option 4. Assess the Agri-food System

This suggestion, for discussion purposes, would have an assessment remitted by retailers to support food safety and programs that guard against food-borne pests and diseases. The basic rationale for this option is to accrue societal costs for these programs (not just the Medfly) to the agri-food system (rather than just to domestic farmers, who are not responsible for these infestations and receive a very small share of the consumer food dollar).

The merits of this option include:

- Reduced state costs and ease of program administration because of relatively few retailers, many of which are capable of electronically tracking their sales and inventories.
- Retailers' increased ability to absorb, distribute, and/or pass along costs throughout the agri-food system (to importers, domestic farmers, distributors, transporters, wholesalers, jobbers, and consumers), due to their comparatively greater market power.
- More equitable distribution of the consumer's retail food dollar for fresh fruit and produce. Because domestic farmers receive a very small share of the consumer's food dollar, it makes little sense to assess them for a benefit enjoyed by the entire system. For example, below are grower prices versus retail prices of oranges, a commodity vulnerable to the Medfly, sold at retail in Los Angeles for the third quarter 2002.

Oranges

Grower vs. Retail Prices In Los Angeles County, Third Quarter 2002

This chart illustrates grower prices vs. retail prices of oranges, a commodity vulnerable to the Medfly.

Week Ending	Grower Price (Per Orange)	Average Retail Price (Per Orange)	% of Retail Received by Grower
09-27-02	$0.11	$0.46	24%
09-20-02	0.11	0.51	22%
09-13-02	0.11	0.51	22%
09-06-02	0.10	0.51	20%
08-30-02	0.10	0.41	24%
08-23-02	0.10	0.51	20%
08-16-02	0.11	0.51	22%
08-09-02	0.11	0.51	22%
08-02-02	0.12	0.51	24%
07-26-02	0.11	0.53	21%
07-19-02	0.10	0.44	23%
Average	0.11	0.49	22%

Sources: USDA Market News Reports for grower prices; U.S. Marketing Services for retail prices.

Funding Options

Option 5. Assess Consumers

This concept is slightly different from option four. While funds would also be remitted by retailers, this program would assess consumers to pay for food safety, pest and disease exclusion, as well as retailer and state administrative costs. The foundation of this discussion item is the broad societal benefit generated by pest and disease exclusion programs and that consumer demand for food imports is directly responsible for transmitting much of this biological pollution.

Implementation would require legislation to remove food sales tax exemptions contained in sections 6351 to 6358(f) of the Revenue and Taxation Code. It would likely require additional language to be added to the Food and Agricultural Code enabling food sales assessments to be used for this program and a concurrent budget change proposal to provide for control language within the Governor's Budget.

All 23 Medfly infestations that have been successfully eradicated in California originated in urban areas.

Option 6. Assess International Travelers and Commerce

International travel and imported products account for all of the pathways by which Medfly and other foodborne pests and diseases can enter the United States. In light of this, the USDA currently charges airlines and other commercial carriers a fee to cover the cost of providing quarantine and plant health inspection services that enable the safe and pest-free entry of passengers and commercial cargo into the United States. USDA supports collecting fees from those with the potential to spread biological pollution as an equitable means of matching program costs to users.

"In short, we need to move to the 'polluter pays' principle. This well-respected strategy, which has demonstrated its effectiveness in raising funds for oil pollution cleanup, could also work for biological pollution." [7]

Currently there is a state-imposed port fee to monitor and prevent biological pollution from ship ballast water. This program, implemented in 2000, charges $200 per commercial vessel calling on California ports, generating $1.8 million annually to assist the state Resources Agency in its mission to protect the state from exotic and invasive aquatic species.

In the early 1990s, CDFA had in place a similar program funded by user fees from both air and marine carriers engaged in foreign commerce. Fees of $200 for vessels and $85 for aircraft arriving in the state created a fund of

"Industries that play a fundamental role as vectors transporting non-native species should bear more of the costs of prevention, control, and research." [8]

[7] *Peter T. Jenkins, "Paying for Protection from Invasive Species,"* Issues in Science and Technology, *Fall 2002.*

[8] *Dr. James T. Carlton, "Introduced Species in U. S. Coastal Waters," Pew Oceans Commission, 2001.*

Funding Options

OPTION 6 (continued)

approximately $3 million that was used to increase inspections and investigations and to administer a public outreach program to protect the state from exotic and invasive species.

The program was suspended in 1996, however, when the courts ruled that the fees were not applied uniformly across all commercial carriers. Legislation that would address the court's concerns—applying similar fees to overland tractor-trailers—appears to be necessary in order to reinstate this user-fee program.

"Releases of invasive species are compelling large additional expenditures of public funds. In essence, taxpayers are subsidizing economic globalization by paying to clean up the biological messes it leaves behind." [9]

Hawaii warrants special consideration since it is a domestic, not international, source of the Medfly.

OPTION 7. NEGOTIATED FULL FEDERAL FUNDING

CDFA Secretary William Lyons Jr. and his border-state colleagues have laid a significant foundation for additional federal support for food safety and pest prevention. They have formed an alliance known as NFACT (comprised of the secretaries of agriculture of New Mexico, Florida, Arizona, California, and Texas). The purpose of this coalition is to bring attention to the needs of border states in federal agricultural policy discussions.

The case for full federal support of pest and disease exclusion programs is four-fold:

- First, the federal government generally preempts the several states in border matters, and it oversees international quarantine regulations for invasive pests. It could be argued that because periodic Medfly invasions in California are the result of penetration of the federal exclusion system, the federal government should bear the entire fiscal responsibility of guarding against new Medfly introductions.
- In addition, the federal government is now placing additional emphasis on opening U.S. markets to the goods of friendly and strategically valued nations, a laudable foreign policy that emphasizes economic development in lieu of blanket aid. An

[9] *Peter T. Jenkins, "Paying for Protection from Invasive Species,"* Issues in Science and Technology, *Fall 2002.*

Funding Options

OPTION 7 (continued)

unfortunate and unintended consequence of this new policy is the potential for additional pest and disease risk to U.S. border states that produce specialty crops. This lag of agricultural policy behind foreign policy, the Department feels, represents a type of unfunded federal mandate to the several states and their industries.

- A third reason for improved federal participation is the need to address the potential threat of bioterrorism and agroterrorism—the deliberate introduction of pests and diseases with the intent to do harm. Invasive agents ranging from Mediterranean fruit flies to foot and mouth disease are naturally occuring and readily available in many parts of the world. There is an ample case to be made that the *deliberate* introduction of the Medfly would have devastating effects on the American economy and food supply.

A disadvantage of full federal funding of pest and disease exclusion is that CDFA may have to relinquish management of these efforts to the federal government.

While full federal funding of pest and disease exclusion is meritorious, it would take significant lead-time.

- Finally, the diversion of USDA border inspection resources (both in terms of funding and personnel) to the new Department of Homeland Security creates an uncertain future for efforts to guard against *unintentional* pest introductions. It is our hope that the federal government's biosecurity capabilities will be maintained or upgraded under this new management arrangement.

All of these dynamics make a case for full federal funding of Medfly exclusion and similar programs that protect people, commerce, and the environment. While such an arrangement is meritorious, it would take significant lead-time. It would most likely require new federal legislation or additional funding placed in the USDA's line items within the President's budget.

A disadvantage of full federal funding of pest and disease exclusion is that CDFA may have to relinquish management of these efforts to the federal government.

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